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ABSTRACT

The efficacy of a self-management program emphasizing self-assessment and self-recording was investigated with a class of nine behaviorally disordered boys (10-13 years old). Following baseline and untrained self-record phases, two training phases in which Ss were reinforced for accurate self-recording were implemented. A final self-record phase followed the training phases. The reliability of the students' self-recording increased through the training phases and maintained at an accurate rate during the final self-record phase. Concurrent decrease in disruptive behavior was demonstrated. Academic response rate did not deteriorate and, in individual cases, showed improvement during the course of the program. (Author/SB)

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THE EFFECTS OF A SELF-MANAGEMENT PROGRAM
FOR BEHAVIORALLY DISORDERED PREADOLESCENT BOYS
IN A PUBLIC SETTING

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An educational program may identify any of a wide variety of behaviors as being a primary objective. Increased knowledge and new skills in academic areas are common objectives. Changes in social behavior are sometimes specified as the desired outcome of an educational program. In special education programs for behaviorally disordered children, teaching these children more adaptive ways of relating to other persons, events, and their academic work is often a major objective.

In this study, training students to more reliably assess and record their own inappropriate behavior was investigated. The crucial concern was to determine the feasibility of developing a self-management training program with limited classroom staff. This program was designed and implemented by two persons (teacher and assistant teacher) in a self-contained class in a public school. The program was operated with no drastic modification of the basic classroom structure.

Educational self-management is here defined as the training of students to take control of various components of their own educational program. Glynn (Glynn, Thomas, and Shee, 1973) developed a conceptual framework for the understanding of self-management including four components:

1. Self-assessment--the individual may examine his own behavior and decide whether or not he has performed a specific behavior or class of behaviors.

2. Self-recording--the individual may objectively record the frequency of his performance of a given behavior or class of behaviors.

3. Self-determination of reinforcement--the individual may determine from all available reinforcers the nature and amount of reinforcement he should receive based upon his performance of a given behavior or class of behaviors.

4. Self-administration of reinforcement--the individual dispenses his own reinforcement (which may or may not be self-determined) contingent upon performance of a given behavior or class of behaviors.

Lovitt (1973) identified similar components as basic to self-management with the addition of selection of skills to be learned; scheduling of time to learn these skills, and presentation of materials as elements of the educational process which may be turned over to student control.

In the present study, the first two components of self-management, self-assessment and self-recording, as identified above, were the focus of concern. The student's accuracy in self-assessment and self-recording was determined by comparing their records of their own behavior with those of the assistant teacher acting as observer. This measure of reliability was used to determine the effectiveness of the training program when assessment and recording of inappropriate behavior were turned over to the students.

Several educational researchers have investigated self-management with behaviorally disordered children. Kaufman and

O'Leary (1972) in a study conducted with highly disruptive adolescents in a psychiatric hospital school, first established low levels of disruptive behavior, and then turned the assessment of behavior and contingent reinforcement over to the adolescents. Disruptive behavior, which was the dependent variable in the study, remained at the previously established low levels. Hence, in this study, although student self-assessment did not establish appropriate behavior, it did effectively maintain it.

Contradictory results were obtained in a follow-up study focusing on self-assessment conducted in the same psychiatric hospital school (Santogrossi et al., 1973). In this experiment, self-assessment was ineffective in reducing disruptive behavior. Though the student's ratings of their own disruptive behaviors correlated highly with the teacher's ratings and those of independent observers, disruptive behavior did not decrease. Further, after a teacher-monitored token system decreased inappropriate behavior, substitution of self-assessment and self-recording to determine reinforcement resulted in a rise of disruptive behaviors to baseline levels.

Drabman, Spitalnik, and O'Leary (1973) demonstrated greater success with self-evaluation in a project in which they gradually transferred evaluation of behavior from the teacher to individual students. First, inappropriate social behavior of nine boys nine and ten years of age identified as highly disruptive was lowered by a teacher-administered token

4.

reinforcement program. Students were then trained to evaluate their own behavior, and were reinforced for evaluations approximating their teacher's. Praise for matching the teacher's evaluations gradually replaced token reinforcement. Finally, with reinforcement dependent solely on the students' self-evaluations, high rates of academic performance with concurrent low levels of disruptive behavior were maintained. Laboratory research (Bandura and Kuypers, 1964; Bandura and Whalen, 1966; and Marston, 1964) demonstrated similar patterns of modeling and observational learning in the acquisition of consistent self-reward behavior.

It should be noted that the Kaufman and O'Leary and Santogrossi studies investigated the effects of self-management on disruptive behavior, while the Drabman, Spitalnik, and O'Leary (1973) study employed a shaping procedure to increase the self-evaluation skills of the children, and then evaluated the effects of self-evaluation on academic performance and social behavior. This necessity of systematically teaching self-management skills was emphasized by Lovitt (1973; p. 16). The present study focuses on the efficacy of a program designed to increase the self-management skills of behaviorally disordered children in the classroom. Specifically it investigates the effectiveness and feasibility of a program including cueing and matching in producing reliable self-assessment and self-recording. Second, the

effects of this program on disruptive social behavior and academic performance are analyzed.

Method

Setting

The study took place in a self-contained adjustment classroom in a public elementary school. The subjects were nine boys identified as emotionally disturbed by the school district's special education assessment procedure. Ages ranged from 10 to 13 years. The boys were bussed from all areas of the district for placement in this class. The staff consisted of the teacher and assistant teacher (who was also completing his graduate internship in Special Education with this class). A token system was in effect in the class all day. Points were available on a contingent basis for both academic performance and social behavior. Work periods during which a child exhibited no inappropriate social behavior resulted in that child receiving ten points. These points were exchangeable for free time, materials, candy, models, various activities, and outings.

Self-Management Program

The self-management program was conducted during an arithmetic work period each morning. The students worked independently for exactly 30 minutes. Following this, approximately five minutes were used to evaluate the students'

performance. During the work period the teacher moved between students, helping them with any questions and verbally praising those students who were working. The assistant teacher observed the class and kept data recording out-of-seats, talk-outs, and abuse (physical or verbal abuse of other persons or their property).

A talk-out was defined as any oral or body caused noise produced without teacher consent. If a verbal utterance or other noise lasted longer than three seconds, each three seconds of duration was considered a single talk-out. An out-of-seat was defined as any instance when a student was not in his chair, facing his desk, with his feet on the floor. An instance of abuse was defined as a verbal or physical action which threatened or physically disrupted another person or their property.

For each instance of a talk-out, out-of-seat, or abuse of another person, the student emitting this behavior was required to write a mediating paragraph (see Appendix). Completion of this paragraph was required before the student was allowed to participate in any of the class's reinforcing activities, recesses, or free time. This intervention had proven quite effective in research by MacPherson, Candee and Hohman (1974).

Procedure

This self-management program consisted of five phases:

Baseline. (Five days) A continuation of the basic classroom token program established previously. This phase was included to establish operant rates of academic performance and disruptive behavior.

Self-Record I. (Six days) Each student assessed and recorded any instances of his own disruptive behavior. The math period was divided into five sections. Every six minutes the observer would call out change of section and the students were to tally any instances of disruptive behavior or put down zeros for that section. During this phase each student's own record determined his reinforcing or punishing contingencies (mediating paragraphs). The object of this phase was to determine the reliability of the students' self-evaluation prior to any training; and to determine the effect of this self-record procedure on their rates of academic performance and disruptive behavior.

Shape I. (Seven days) The students continued to self-assess and self-record, however, during this phase the observer's record rather than the students' determined the contingencies. Two modifications were made in the program to attempt to increase the students' reliability. A cueing chart was employed to clarify to the students appropriate as opposed to inappropriate behaviors (see Appendix). Second, each

student's record was compared to the observer's record and reliable self-observation was reinforced with points. In this phase a student would receive 30 points for a perfect match with the observer's record, and 10 points less for each disagreement. For example, if a student was one instance off he would receive 20 points; two off was worth 10 points; three off gained zero points; and more than three off resulted in the subtraction of ten points for each disagreement.

Shape II. (Eight days) Same as Shape I with one change. The accuracy of the students' records had to be greater to continue to maximize contingent points. Again 30 points were the payoff for a perfect match. However, if the student was one instance off he received zero points with minus 10 for each additional error.

Self-Record II. (Twelve days) Same as Self-Record I again with the students' records rather than the observer's determining reinforcement and the assignment of mediating paragraphs. Accuracy was no longer reinforced, though the cueing chart remained up.

Results

First presented will be reliability data for the class as a group. This will indicate the general efficacy of this program in producing reliable self-assessment and self-recording. Next, data on the class's disruptive behavior rate (in which talk-outs, out-of-seats, and abuses are combined),

and the academic performance rate will be presented to demonstrate the effects of the self-management program on these important classroom behaviors. Following the group data, the performance of several individual students will be presented. These individual results show interesting variations in the effects of the different phases on the individuals involved.

Student Reliability. The reliability of the class as a whole increased steadily from Self-Record I through Shape I and II; and improved even more in Self-Record II (see Graph CI). Reliability percentages were derived by dividing the agreements of each student's and the observer's records by the total of agreements plus disagreements. The class reliability means by phase:

Self-Record I - $\bar{x} = 81\%$

Shape I - $\bar{x} = 96\%$

Shape II - $\bar{x} = 95\%$

Self-Record II - $\bar{x} = 99\%$

Inappropriate Behavior Rate. The class's inappropriate behavior rate increased from Baseline to Self-Record I, then decreased in the Shaping phases, with the lowest rates of the project occurring during Self-Record II (see Graph C2). Mean rates for the class by phase:

Baseline	- \bar{x} = .21
Self-Record I	- \bar{x} = .417
Shape I	- \bar{x} = .129
Shape II	- \bar{x} = .188
Self-Record II	- \bar{x} = .05

Academic Performance Rate. Academic performance operationalized as number of correct digits in each answer decreased substantially for the class as a whole from Baseline to Self-Record I, increased during Shape I and II, and during Self-Record II maintained at a rate very close to that of Baseline (see Graph C3). Median rates for the class by phase:

Baseline	- Md. = 9.47
Self-Record I	- Md. = 5.47
Shape I	- Md. = 13.13
Shape II	- Md. = 9.55
Self-Record II	- Md. = 8.38

Individual Performance

Van and Melvin were initially quite unreliable in their self-assessment and self-recording with mean reliability scores of 39 percent and 60 percent during Self-Record I (see Graphs V1 and M1). This unreliability coincided with rather high mean rates of disruptive behavior, .133 for Van and .056 for Melvin (see Graphs V2 and M2). In the shaping phases both boys' reliability increased substantially. Melvin's increased to 93 percent and 92 percent for Shape I and Shape II. Van's

reliability increased to 93 percent during Shape I and 98 percent for Shape II. Both students' mean reliability during Self-Record II was 100 percent.

These improvements in reliability of self-observation occurred concurrently with decreases in disruptive behavior. Melvin's mean rate for disruptive behavior decreased from .056 in Self-Record I to .038 and .025 in Shape I and Shape II, and stayed at 0.0 for the entirety of Self-Record II. For Van an increase from a mean Baseline rate of .05 to a mean rate of .133 during Self-Record I occurred. During Shape I and Shape II Van's mean rate dropped to .024 and .017 followed by a further drop to .009 during Self-Record II. It should also be noted that academic rate for both boys was very close or slightly above Baseline rate during the final Self-Record phase (see Graphs V3 and M3).

One student, Tad, was initially quite accurate in his Self-Recording and maintained this accuracy throughout the course of the program (see Graph T1). His disruptive behavior decreased substantially from Baseline to Self-Record I, dropping from a mean rate of .067 to .017. Tad's disruptive behavior maintained at a very low rate for the rest of the program (see Graph T2). Tad's academic rate decreased slightly from Baseline to Self-Record I, and increased greatly during Shape I (from .43 to 2.53, his highest rate during the program). Shape II saw another decrease to 1.0 followed by a rise to 1.7 during Self-Record II. Tad's rate

during Self-Record II in which his self-evaluation determined his own contingencies was substantially higher than his Baseline rate, 1.7 as opposed to .6 (see Graph T3).

Another student, Malcolm, during the course of this program, steadily improved his academic performance as his reliability improved. Malcolm's reliability, originally 71 percent during Self-Record I, increased to 98 percent in Shape I, 100 percent in Shape II, and maintained at 100 percent during Self-Record II (see Graph MR1). Malcolm's mean for disruptive behavior showed an increase from the Baseline mean of .50 to a Self-Record I mean of 2.33. Malcolm's means during Shape I and Shape II were .143 and .4. His final mean of 0.0 during Self-Record II was substantially lower than that of Self-Record I, 2.33 (see Graph MR2). Malcolm's academic performance demonstrated steady improvement over the course of the project. Following median correct rates of .22 and .17 for Baseline and Self-Record I respectively, his medians increased to .89 and 1.57 during Shape I and Shape II. His median rate of 1.6 during Self-Record II was Malcolm's best performance of the program (see Graph MR3).

Discussion

From the group data and that of the individual students reported, the efficacy of this program in producing reliable self-assessment and self-recording with this class of

behaviorally disordered children is indicated. This production of reliable self-evaluation is quite similar to that achieved by Drabman, Spitalnik, and O'Leary (1973) in which they also employed a shaping procedure. The relative simplicity of the training procedures indicate that such a program could be easily adapted to nearly any classroom setting. The two elements of the training program, cueing chart and shaping procedure, need to be further investigated in order to determine their independent effects on student reliability.

One of the main reasons to attempt to increase the ability of behaviorally disordered children to evaluate their own behavior is the probability that with accurate self-evaluation behavior can change in positive ways. White and Johnson (1971) studied the reactive nature of self-observation. They found self-observation to have a clear reactive influence which "in general should result in a behavior change in a therapeutic direction (p. 495)." This pattern is evidenced in the current program by the dramatic decreases in disruptive behavior for the class in general and specifically students like Van and Meluin. This positive effect of self-evaluation was evident in several earlier classroom studies of self-recording (Jones, Fox, Billingsley, 1972; Borden, Hall and Mitts, Exp. I, 1971; Christenson, 1975).

It is interesting to note individual differences in behavior change as a function of the successive phases of this project. With the initiation of Self-Record, K, Tad's

disruptive behavior rate decreased dramatically and stayed at quite low levels throughout the rest of the project. Both Van and Malcolm increased their rates of disruptive behavior during this initial Self-Record phase. Rates of disruptive behavior for Van, Malcolm, and Melvin (Melvin's disruptive rate had remained nearly equal to Baseline during Self-Record I) all decreased through the shaping phases and maintained very low rates during the final self-recording phase. While Tad seemed to need little training in self-assessment, these other students were not very reliable in their self-assessments and their disruptive behavior did not decrease until the shaping procedures had improved their self-assessments.

The correspondence of increased reliability of self-observation with decreases in disruptive behavior both for the class as a whole and the individual students is intriguing. A positive cycle seemed to develop in which accuracy in assessment reinforces low rates of inappropriate behavior and improvement in behavior makes self-assessment easier and more enjoyable. Further investigation into the relationship of self-assessment skills and positive behavior change could prove extremely valuable for educators.

The results of this project have many implications for people currently working in the schools. A successful method of teaching students to be reliable observers and recorders of their own behavior was demonstrated. This program was imple-

mented by the teacher and assistant teacher with no major modification of the ongoing classroom procedures. It did not take a significant amount of extra teacher time. Finally, the fact that the program demonstrated success in increasing the students' abilities to evaluate their own behavior, while maintaining academic performance and decreasing disruptive behavior, demonstrates the potential value of such a program in the public schools.

Implications of this project for persons working with behaviorally disordered children in special education are also indicated. For these children, a special education curriculum must not only provide them with academic skills but also with social skills to enable them to interact successfully beyond the school program. Systematic instruction in self-management skills is crucial. This project demonstrated an effective method of training children to be able to assess and record their own behavior (both significant components of self-management). Hopefully, further research can identify more fully educational methods of providing these children with the skills such as self-evaluation which they need to survive.

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APPENDIX

Mediating Paragraph I--Talk-Out

I will not talk out in class because it interrupts my work. Also, it bothers the other people in the room. If I'm quiet during work time, I'll get my assignments done. Others will finish also. Finally, the day will go better because nobody is getting mad at me for talking all the time.

Mediating Paragraph II--Out of Seat

I will stay in my seat during work time because I will get my work done more quickly. Also, I won't bother others and I won't get in trouble. When I'm out of my seat without permission, I usually get in situations where it's too easy to abuse someone else. Also, I get in trouble for talking out.

Mediating Paragraph III--Abuse

Let's think about the word abuse. It means to bother or bug someone else, with or with physical action. This includes things like swearing at another person, "bad mouthing" another person, or hitting, poking, pushing, pulling, taking, or threatening another person or their property. Do you like it when someone swears at you, physically bothers you, or messes with your property? Since you don't, then why should you verbally or physically abuse anyone else?

APPENDIX

BEHAVIOR SPECIFICATION CHARTS

The following are replicas of three feet by four feet wall charts used in the classroom.

DO

Stay in your seat, keep your desk clean, and work on math.

If you need anything, raise your hand and Mr. Heliotis or Mr. Lawrence will call on you.

Be patient, there are ten students who need help and only two teachers.

Every six minutes, think back and record any talk-outs, out of seats, or abuses you have.

DON'T

Talk-Out--Noise from talking, singing, humming, tapping, or note passing without permission.

Get out of seat--Being out of your seat without permission.

Abuse--Physically or
verbally bothering someone
else or their property.

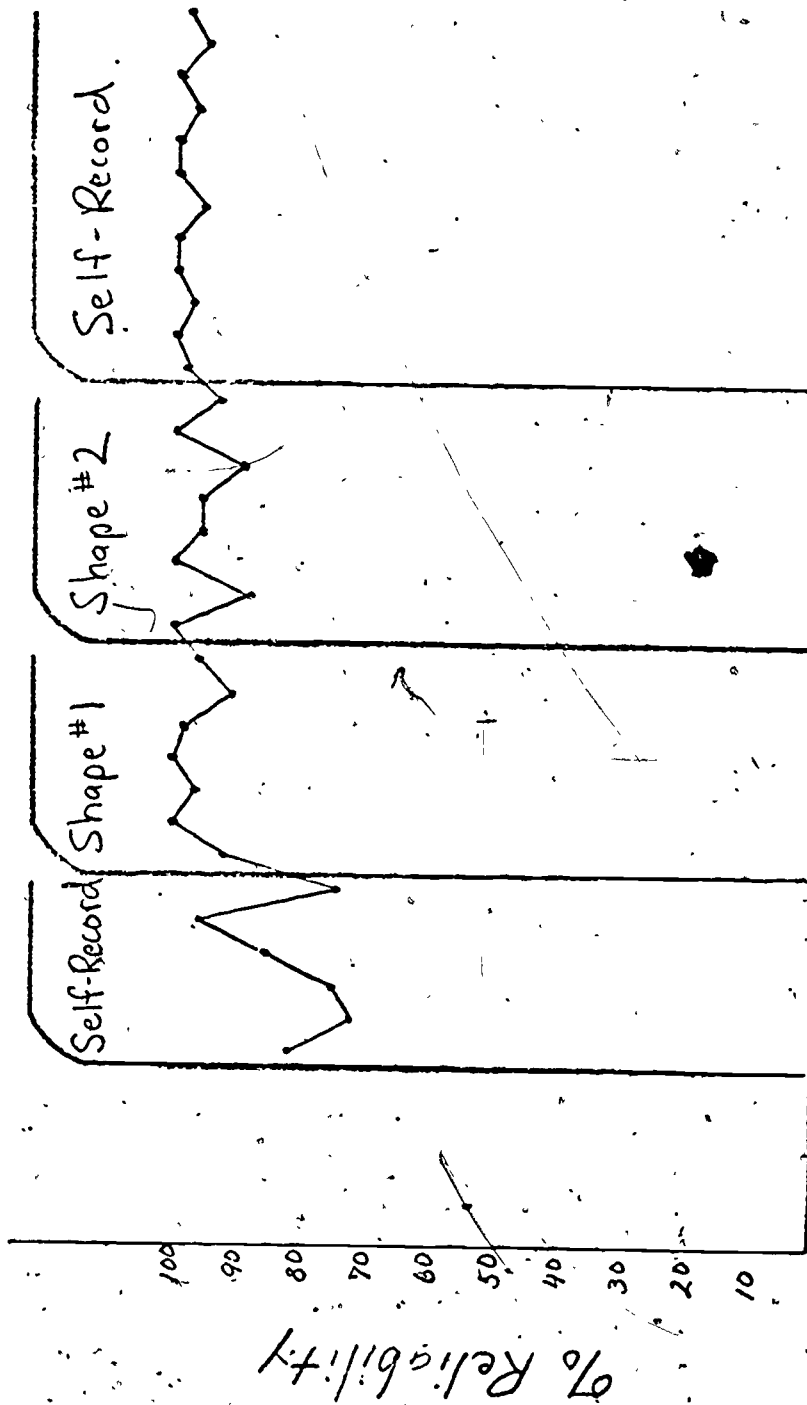
Don't forget to record if
you do any of the above.

GROUP RESULTS BY PHASE

Baseline Phase	Self-Record I	Shape I	Shape II	Self-Record II
Self Observation Reliability (%)	81%	96%	95%	99%
Academic Perf Rate (x corrects) <i>Nd. corrects</i>	9.47	5.47	13.13	9.55
Inappropriate Behavior Rate (x)	.21	.417	.129 .729 .188	.105

Reliability: Class Daily Means

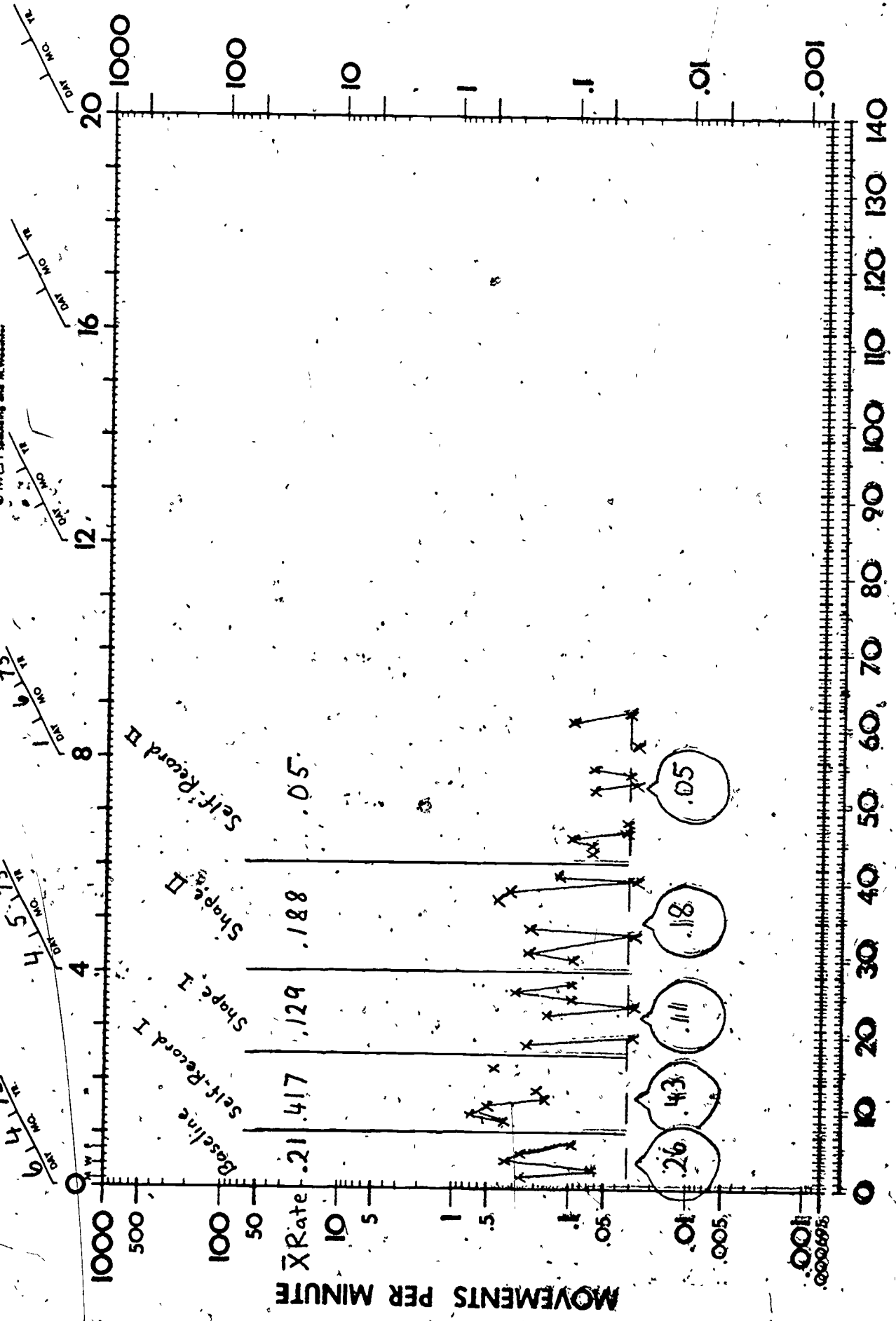
$\bar{X} = 81\%$ $\bar{X} = 96\%$ $\bar{X} = 95\%$ $\bar{X} = 99\%$



Days

24 HOUR-20 WEEK BEHAVIOR CHART
GRAPHICS FOR BEHAVIORAL MEASUREMENT
500 W AMALON DR
EUGENE, OREGON, 97403
© 1971 by Spaulding and M. Woodhewer

CALENDAR WEEKS

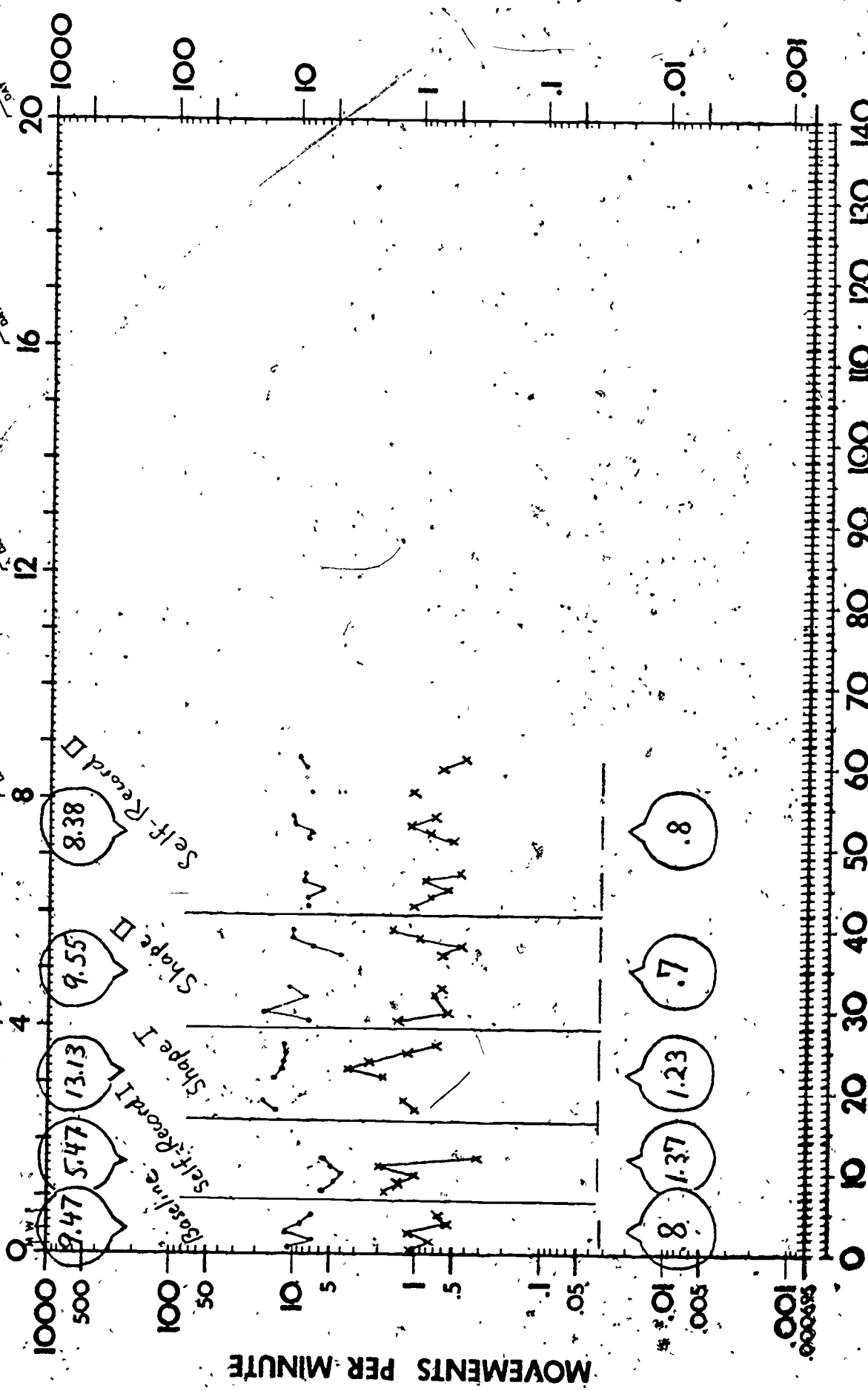


Class Inappropriate Behavior

CALENDAR WEEKS

24 HOUR - 20 WEEK BEHAVIOR CHART
GRAPHICS FOR BEHAVIORAL MEASUREMENT
3100 W. AMAZON DR.
EUGENE, OREGON, 97403
© 1971, LT Spaulding and M. Weathers

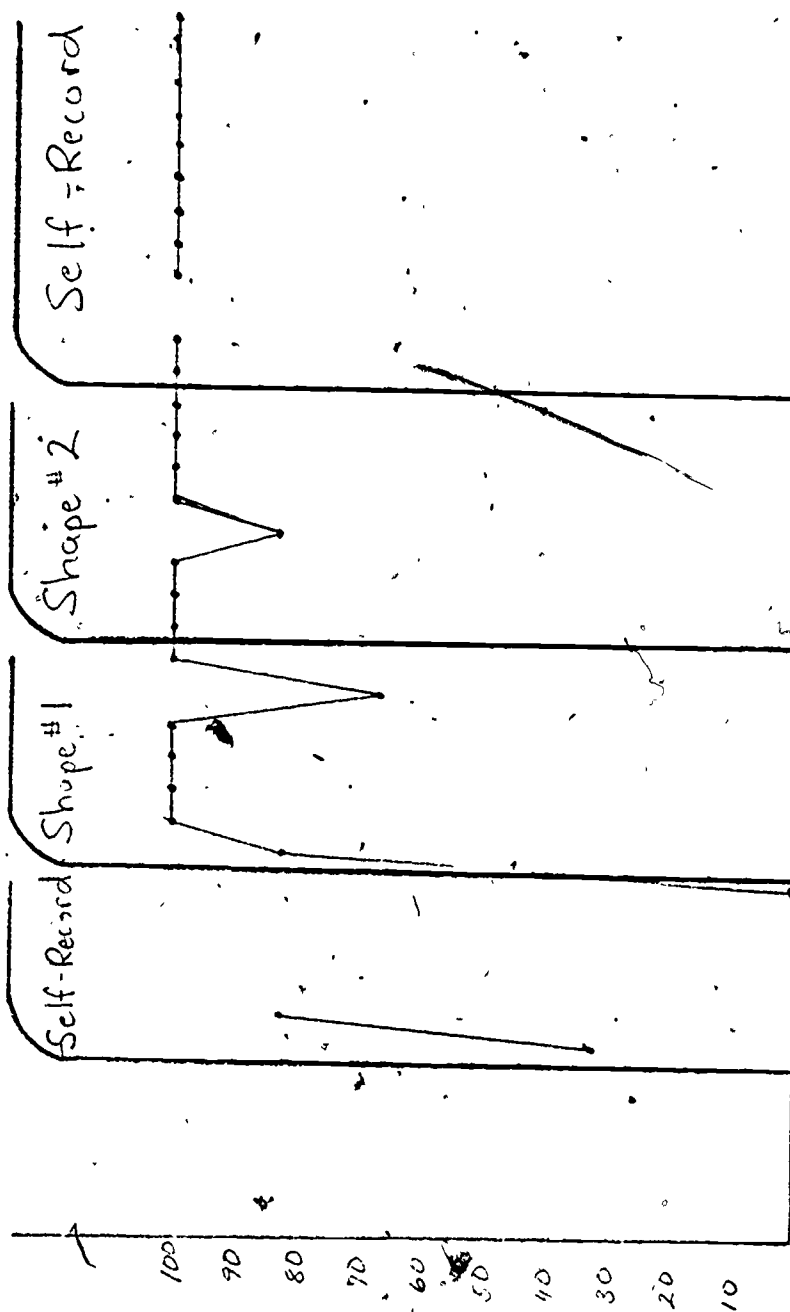
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(C-4)

Reliability: Van

$\bar{X} = 39\%$ $\bar{X} = 93\%$ $\bar{X} = 98\%$ $\bar{X} = 100\%$



Days

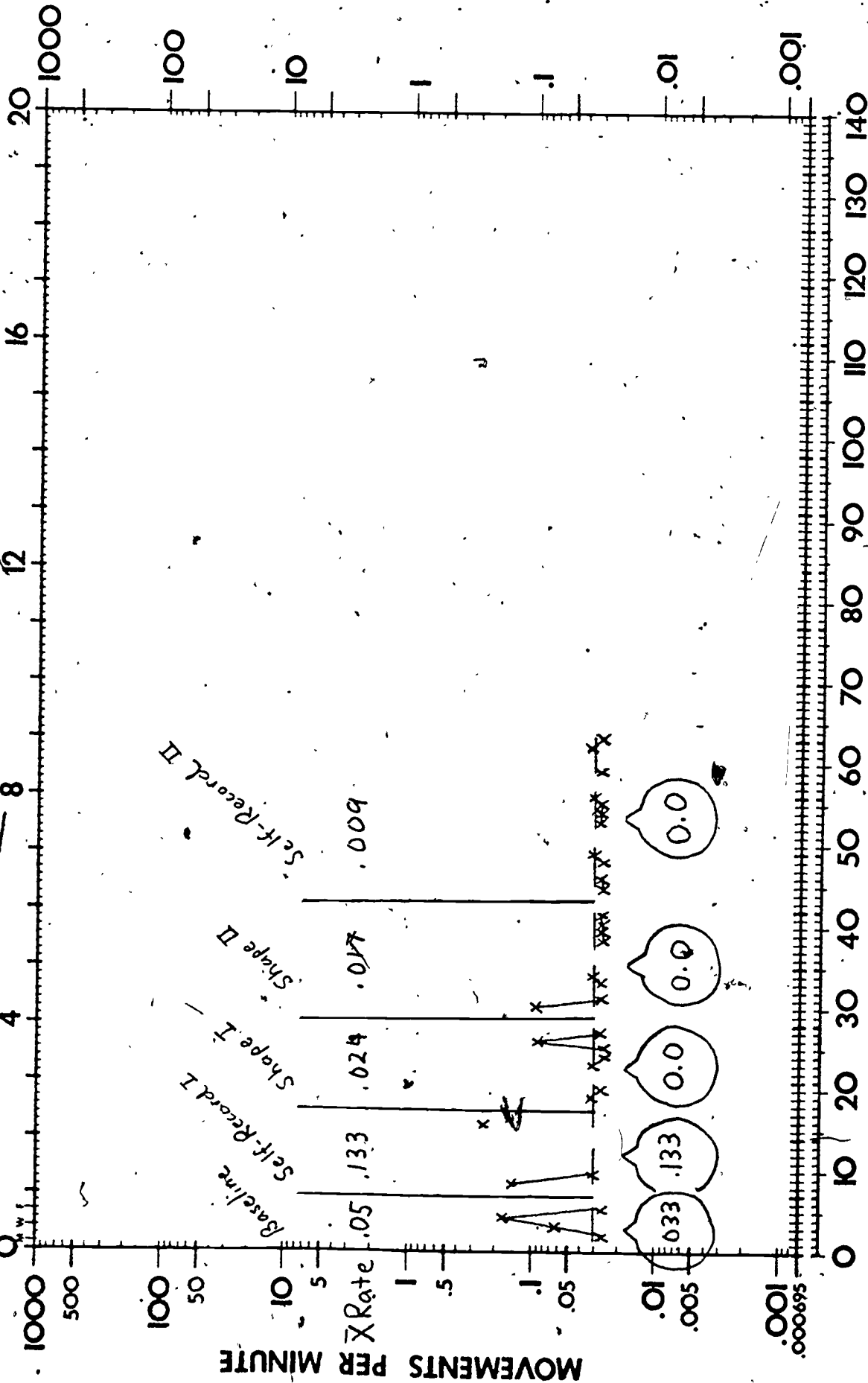
% Reliability

C-2

24 HOUR-20 WEEK BEHAVIOR CHART
GRAPHICS FOR BEHAVIORAL MEASUREMENT
SUGGESTED BY DR.
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CALENDAR WEEKS

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DAY MON TUE WED THU FRI SAT SUN
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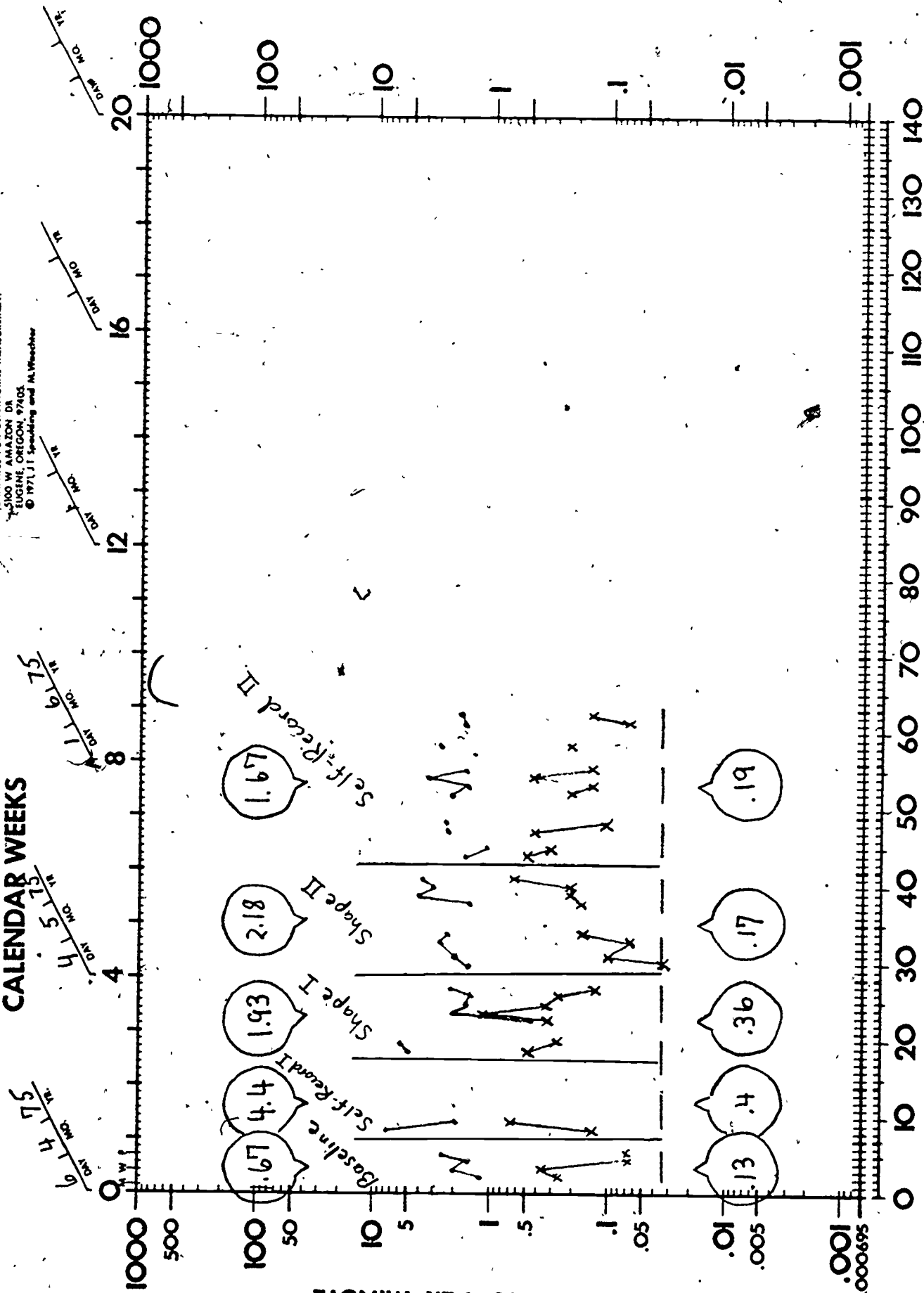


Van Inappropriate Behavior

MOVEMENTS PER MINUTE

CALENDAR WEEKS

24 HOUR 20 WEEK BEHAVIOR CHART
GRAPHICS FOR BEHAVIORAL MEASUREMENT
500 W AMAZON DR
EUGENE, OREGON, 97403
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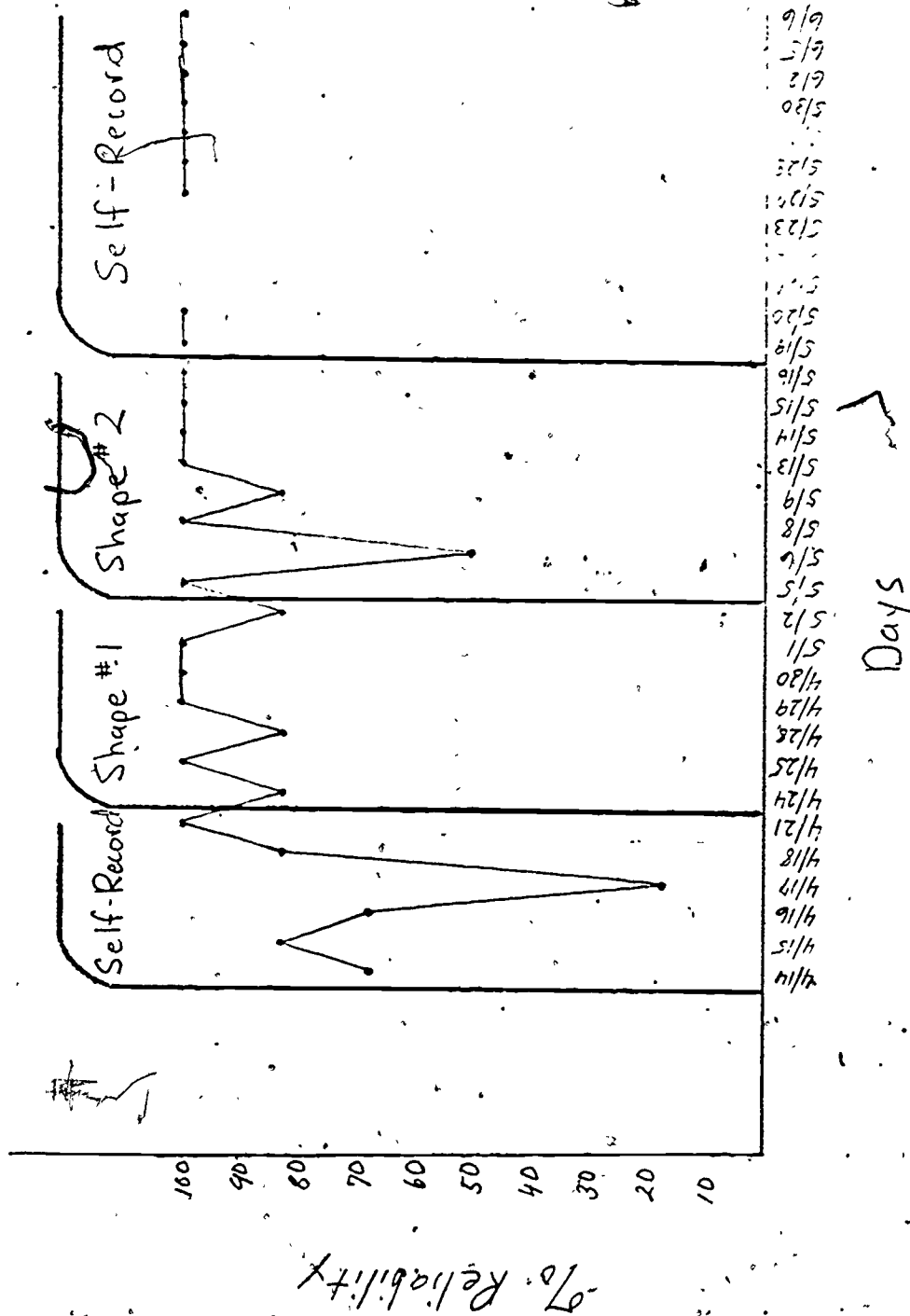
SUCCESSIVE CALENDAR DAYS

Uan

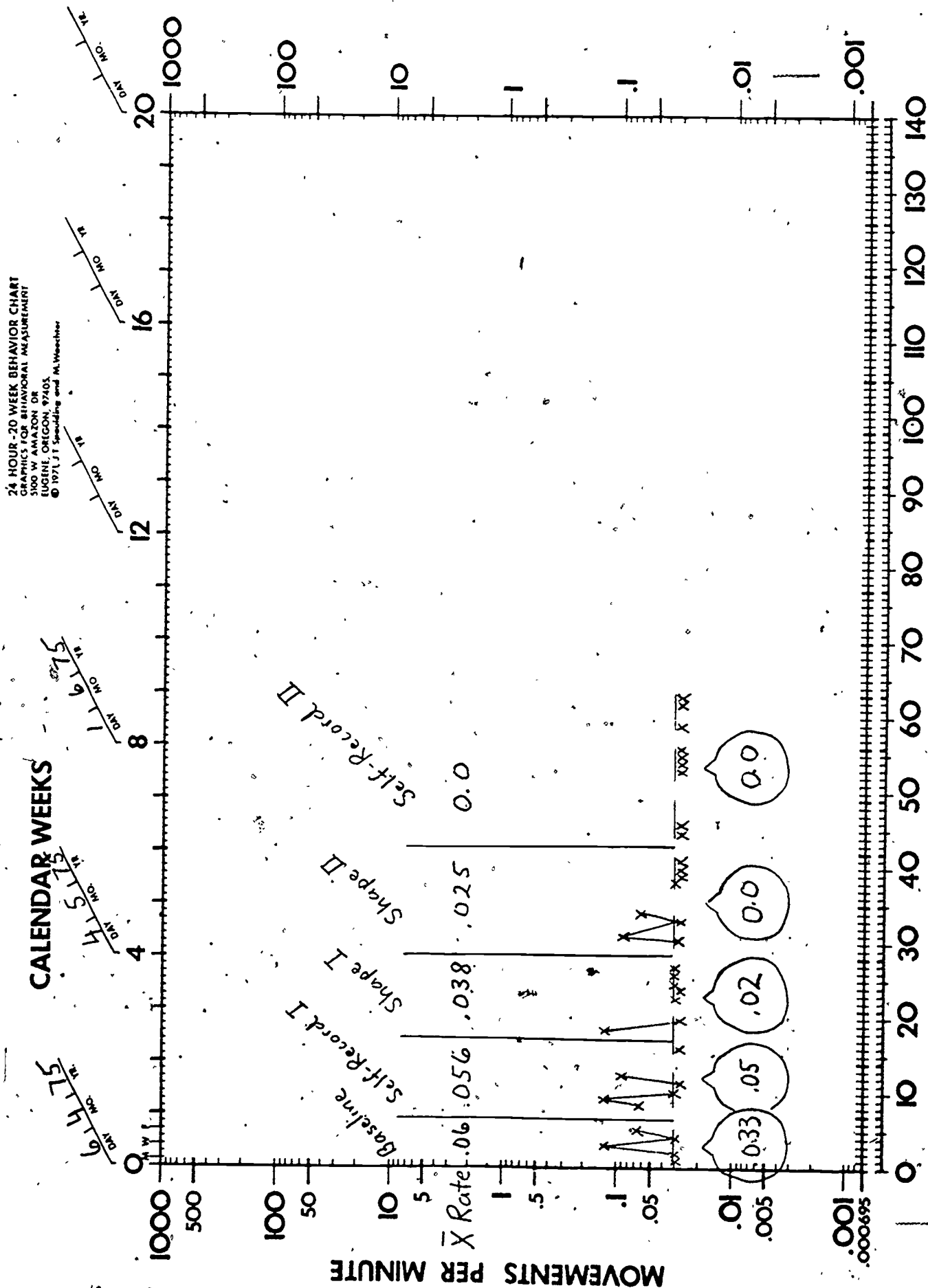
Correct and Incorrect Numerals

Reliability: Melvin

$\bar{X} = 60\%$ $\bar{X} = 93\%$ $\bar{X} = 92\%$ $\bar{X} = 100\%$
 $Md = 75\%$ $Md = 99.6\%$ $Md = 99.8\%$ $Md = 100\%$



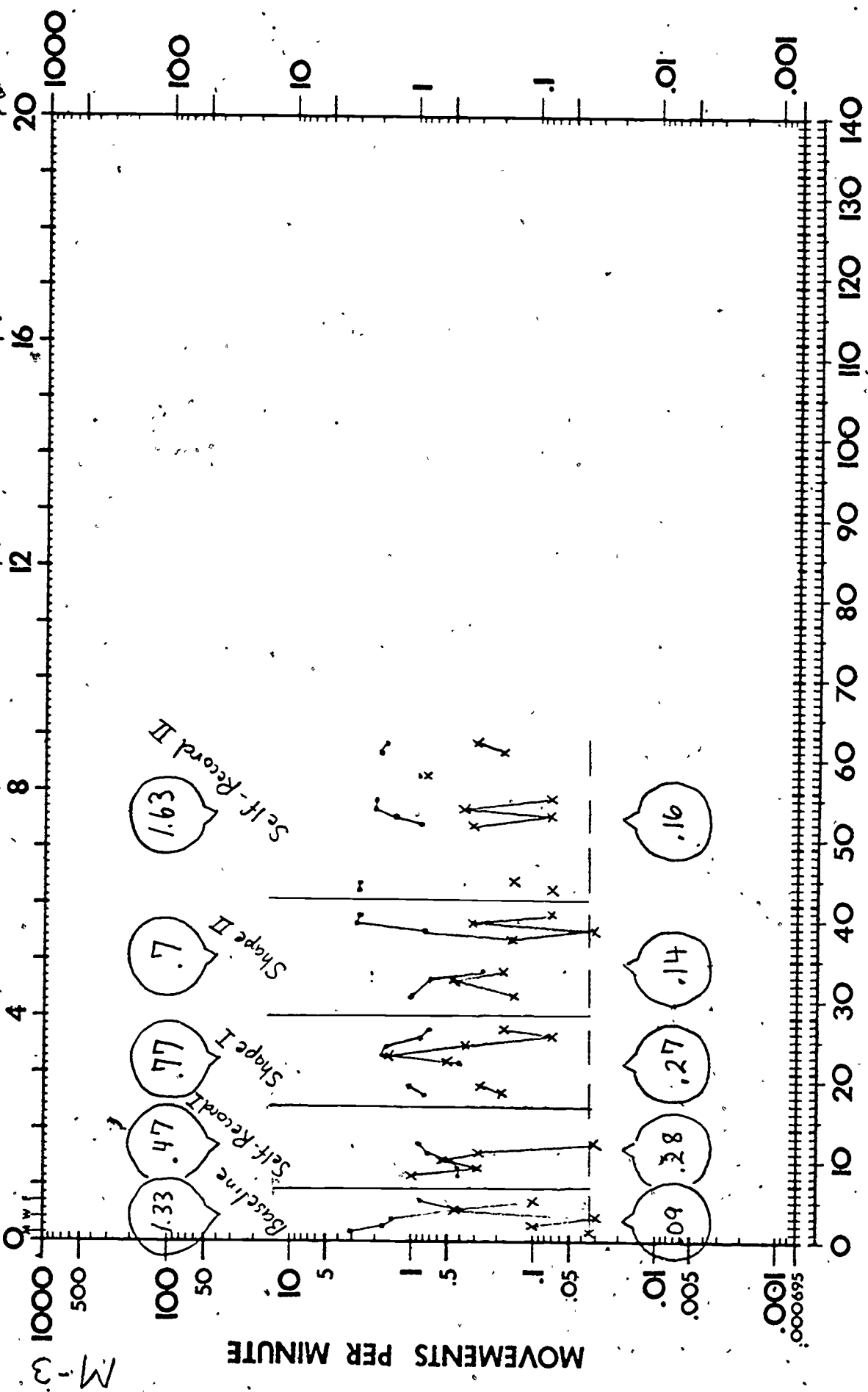
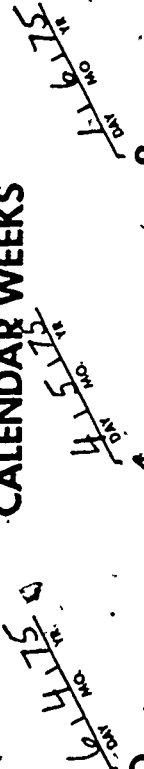
24 HOUR-20 WEEK BEHAVIOR CHART
GRAPHICS FOR BEHAVIORAL MEASUREMENT
5100 W AMALON DR
EUGENE, OREGON, 97403
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SUCCESSIVE CALENDAR DAYS:

Inappropriate Behavior

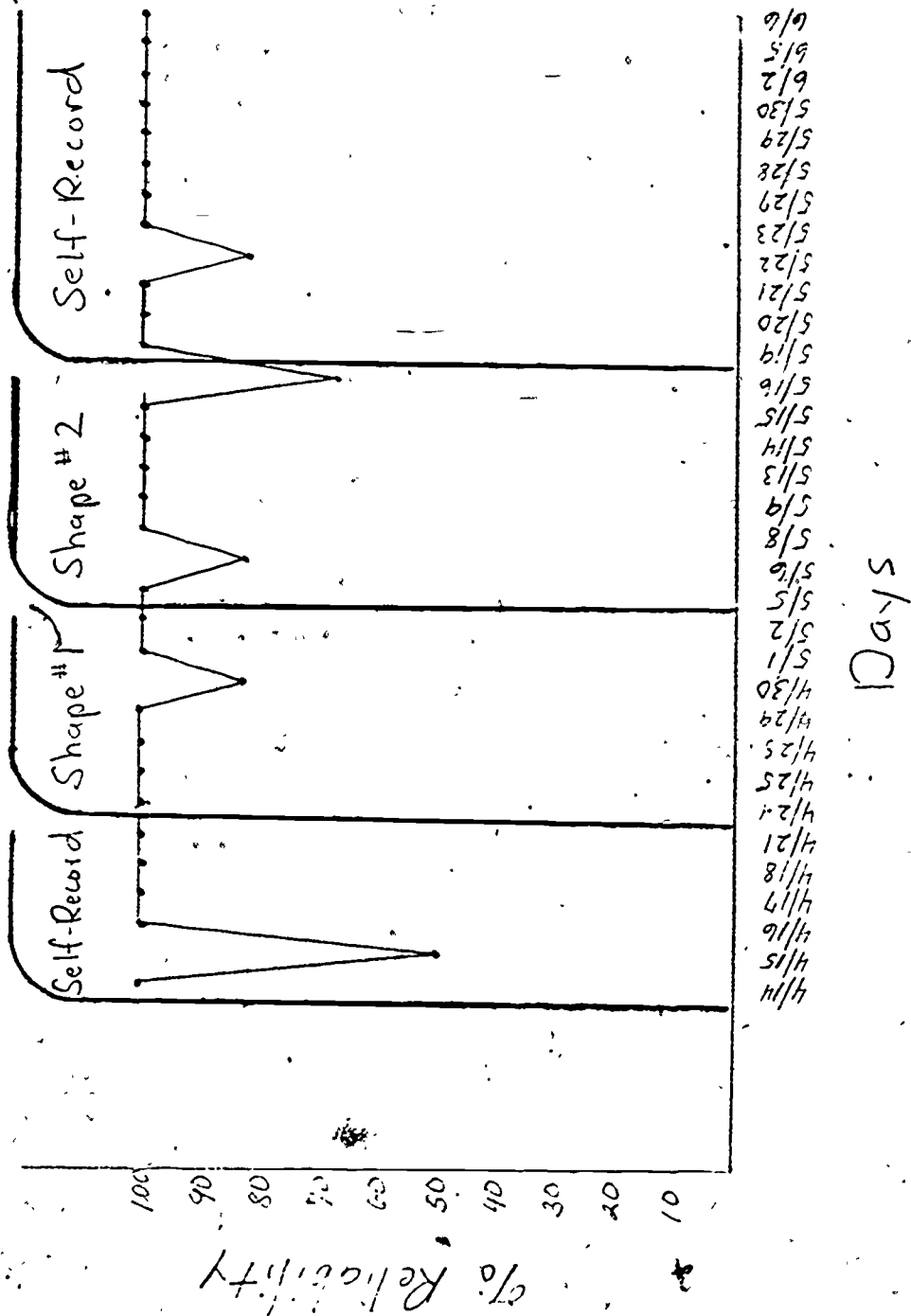
CALENDAR WEEKS



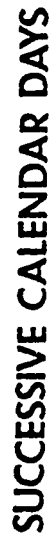
Melvin Correct and Incorrect Numerals

Reliability: Tad

$\bar{X} = 92\%$ $\bar{X} = 98\%$ $\bar{X} = 94\%$ $\bar{X} = 99\%$



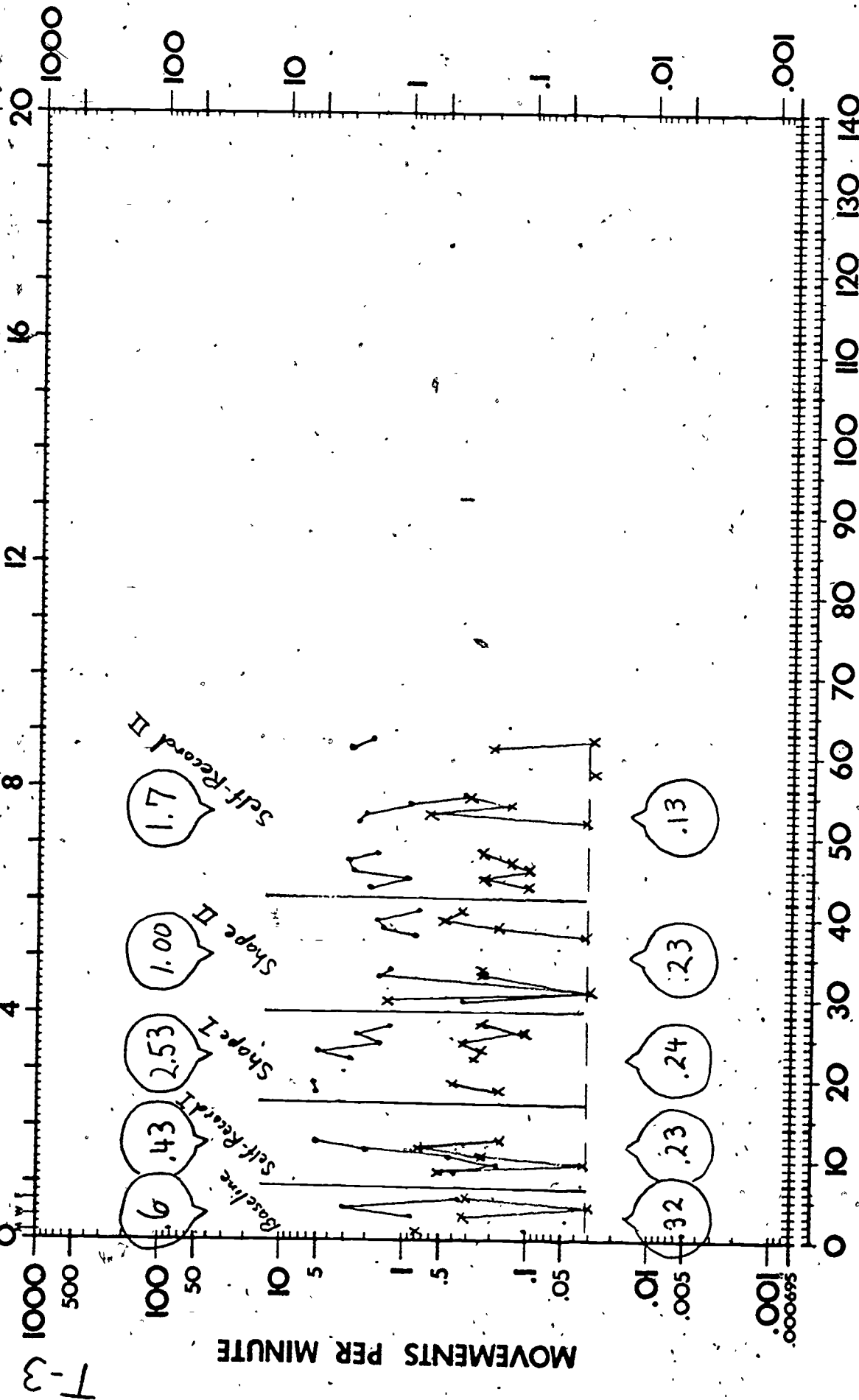
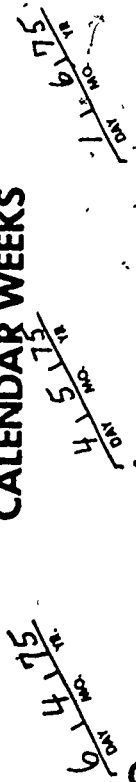
1



Inappropriate Behavior

CALENDAR WEEKS

24 HOUR -20 WEEK BEHAVIOR CHART
GRAPHICS FOR BEHAVIORAL MEASUREMENT
3100 W ANAZON DR.
EUGENE, OREGON, 97403
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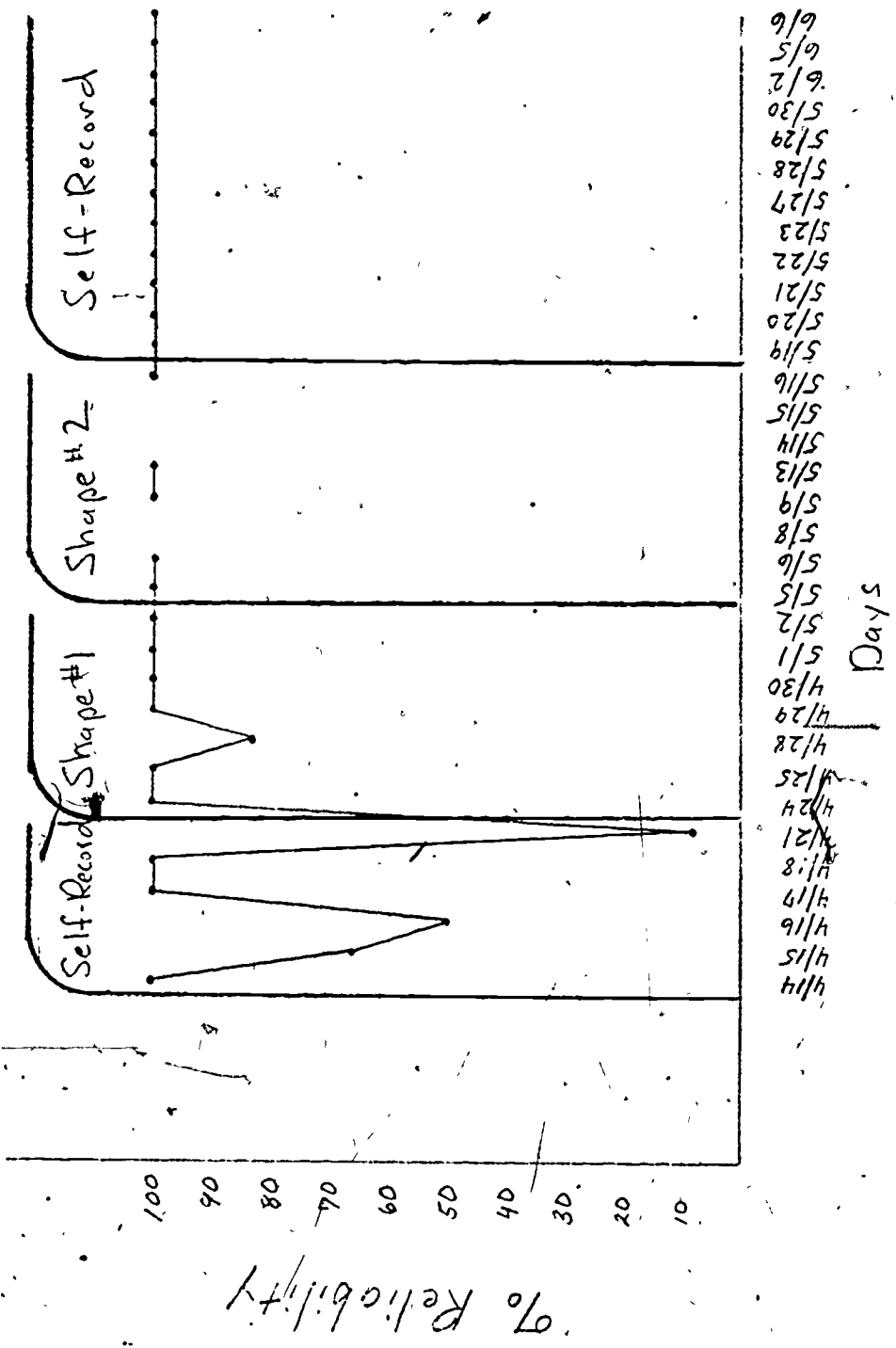


Correct and Incorrect
Numerals

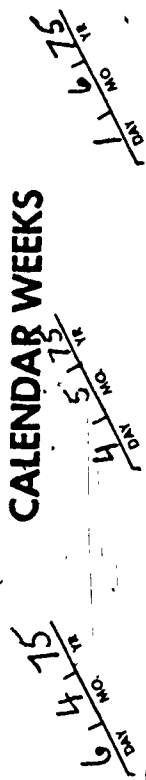
Tad

Reliability: Malcolm

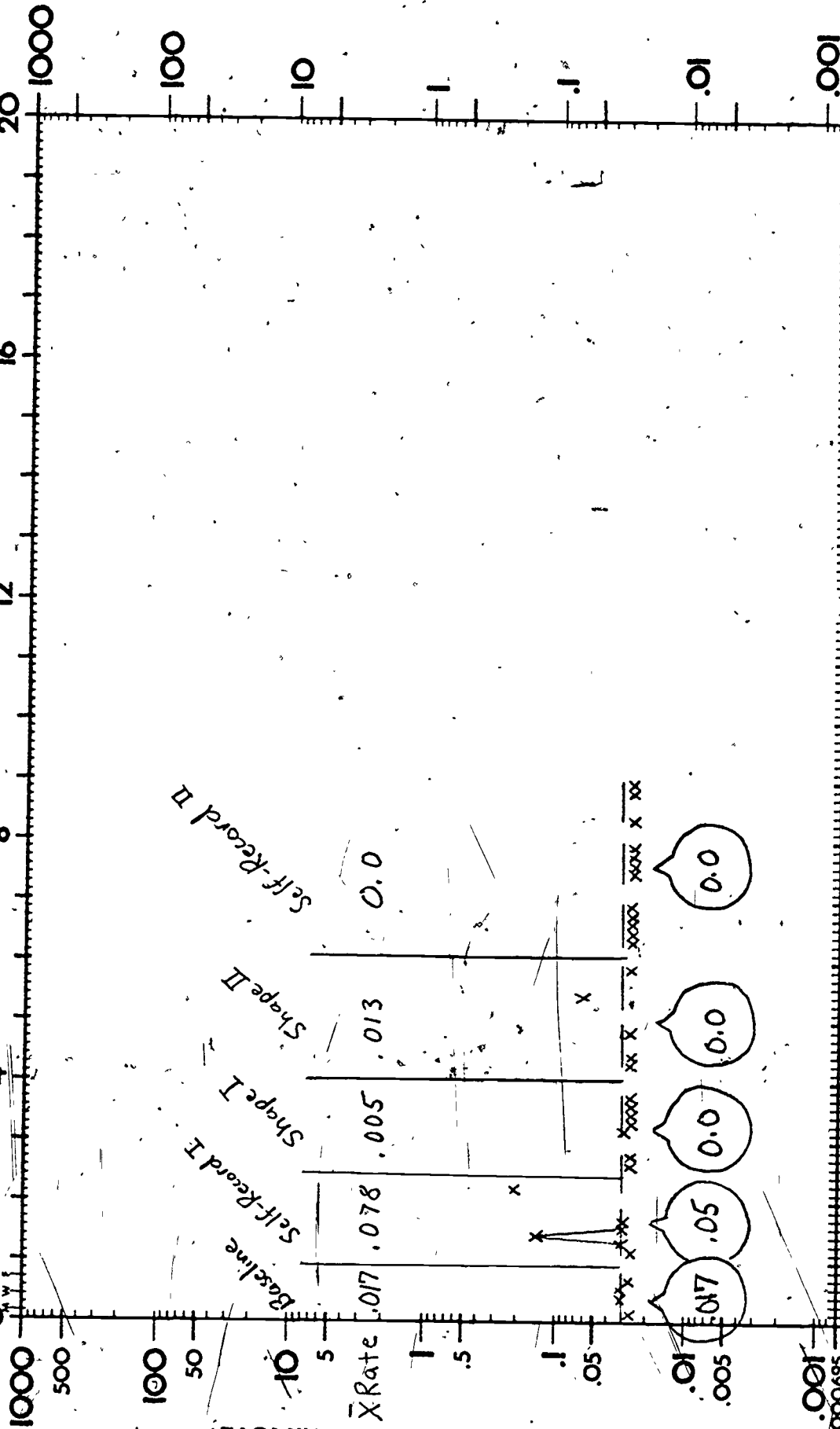
$\bar{X} = 71\%$ $\bar{X} = 98\%$ $\bar{X} = 100\%$ $\bar{X} = 100\%$



CALENDAR WEEKS



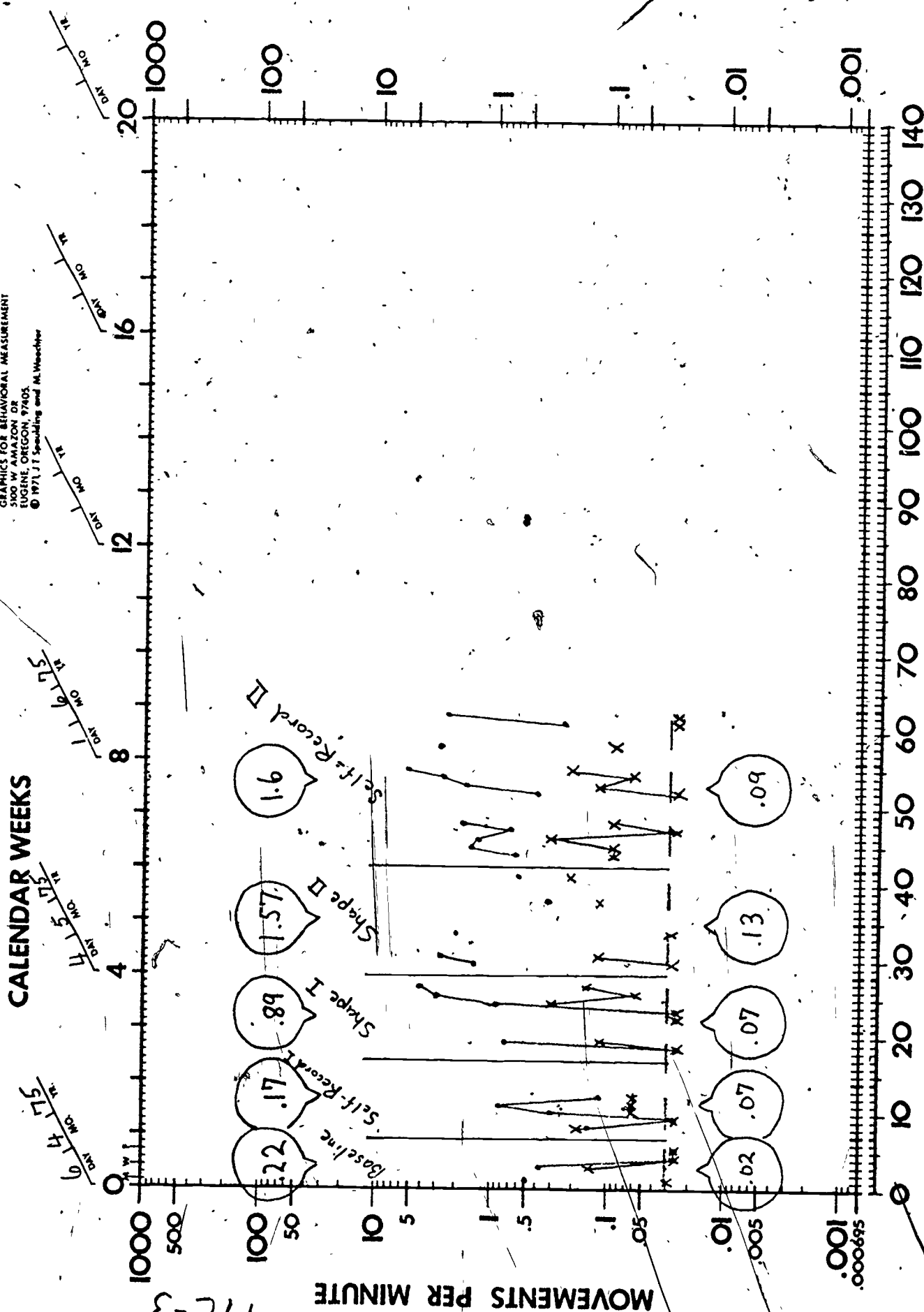
MOVEMENTS PER MINUTE



SUCCESSIVE CALENDAR DAYS

Inappropriate
Behavior

Malcolm



SUCCESSIVE CALENDAR DAYS

Malcolm

Correct and Incorrect Numerals